

“An Evaluation of the Feasibility of Combining Carbon Dioxide Flooding Technology
with Microbially Enhanced Oil Recovery Technologies in order to Sequester Carbon
Dioxide”

Principal Investigator
W. Todd French
Mississippi State University
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The objective of this project is to determine the fate of carbon dioxide injected into subsurface oil formations where microbial activity in these formations is high because microbially enhanced oil recovery technologies are actively being practiced. Mississippi State University began February 20, 2006 revitalizing archived microbial specimens that were isolated from subsurface oil formations. Cultures from previous DOE supported work were archived using traditional microbial techniques. These techniques place the microbes into a hibernation state. Revitalization of these cultures involves a tedious process of slowly introducing nutrients to stimulate cultures. To date 25 cultures from MSU stock microbial collection have been subcultured. Cultures are being cultivated on tryptic soy agar, mineral salts medium (hereinafter referred to as MSM) with crude oil as the carbon and energy source, MSM with n-hexadecane as the carbon and energy source, and MSM with molasses as the carbon and energy source. Since these cultures are not pure cultures and are possibly consortiums, several types of media are being employed to insure that all members of the consortium are revitalized. Experiments will now focus on determining whether these consortiums have the ability to convert carbon dioxide into methane. For these experiments, consortiums will be cultured in the media listed above and supplemented with extra carbon dioxide. Using gas chromatography analysis headspaces in the culture vessels will be analyzed for the presence of methane.

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Students Receiving Support:

Matthew Kettleman (Undergraduate Researcher)